Vermont Forest Health

Insect and Disease Observations—September 2015

Department of Forests, Parks & Recreation
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Hot and Dry Conditions: Fall Foliage Postponed but not Cancelled

The annual Northeast Kingdom Fall Foliage Festival, over 50 years old, brings leaf-peepers to seven northern Vermont towns over 7 days. This event has been held during the last week of September all these years to capture peak foliage in the NEK. This year, though, visitors looking for vibrant reds, oranges and yellows saw more green mixed in than usual.

September did see a number of sunny days, a key ingredient for brilliant foliage; but it was warm. Temperatures in the upper 80's and low 90's were 4 to 9 degrees above normal early in the month. Numerous records were broken or tied. There was no widespread frost event, with only scattered frost in the coldest pockets.

Early fall color in Walden in 2015 (9/27/15 on right) compared to 2014 (9/28/14 on left) Photos: T. Greaves

Rain was also in short supply and below normal in much of the state. A widespread soaking occurred from September 11th to 14th, but resulted in varying amounts. Less than an inch was recorded at our Essex fire weather station and over 3" at the Woodford station. As of 9/22, according to the U.S. Drought Monitor, all but the four northeastern counties were abnormally dry. In the month's final days, rain helped mitigate drought conditions.

Also late in the month, temperatures were more seasonal, with cooler days and crisp nights in 30's and 40's, just the trigger to get the color show in high gear. Hillsides responded, showing a blush of color amid the green. Scientists tell us that red pigments protect plants from stress, explaining lore from old-timers that dry years result in the brightest foliage. With normal weather conditions, a spectacular foliage season should come on quickly.

By the end of the month, red pigment was common on red maple (far left: Underhill, left: Lye Brook Wilderness). Photos: J. Halman, D. Dillner

Bright colors will not be observed on every ridgetop. During our aerial surveys, we started to detect some hardwood browning on rocky, dry locations in late August. However, symptoms this year have been less pronounced than the drought in 2002.

In some locations drought led to "scorch", or brown margins, on a variety of hardwoods. In others, there was early leaf drop, as trees tried to conserve moisture. Early leaf drop was most noticeable on white ash, whose heavy seed crop added to the brown appearance of the canopy. Ash is sensitive to late season drought, which makes bark more vulnerable to cracking, and may initiate decline. Drought has also contributed to widely scattered hemlock mortality on shallow sites, where hemlock borer has infested stressed trees.

Drought symptoms were commonly observed during our aerial surveys on rocky, dry locations in southern and western Vermont (right). In Wells, 2015 symptoms (below right) were not as severe as in 2002 (below left). Photos: D. Dillner, L. Lund

Symptoms of drought included browning and early leaf drop on ash (far left), and marginal scorch on sugar maple (left). Photos: B. Schultz

Dry conditions allowed several wildland fires to burn deep into the ground. In Readsboro, a fire smoldered in the duff for a week, burning 12" deep or more. Large roots were consumed, resulting in trees tipping over.

In Readsboro, a wildland fire spread below the ground from the bottom of the duff layer resulting in pockets of "overhang" at the edge of the burn. (Best shown at top right of photo. Combi tool for scale.) Photo: L. Lund

Hardwoods Harboring Cryptic Caterpillars

We've already reported increasing populations of Maple leafcutter (especially in the Northeast Kingdom) and Maple trumpet skeletonizer (statewide) in earlier Forest Health Updates. They became increasingly noticeable as the growing caterpillars consumed more foliage. But even fully grown, these caterpillars are tiny, maxing out at 3/8" and 1/2", respectively. They can still be found within their cases in early October. As late season defoliators, their impact on tree health is generally small. However maple leafcutter has been linked to sugar maple dieback in monocultures where high populations persisted for years.

Skeletonizing caterpillars leave a network of leaf veins when they feed. Maple leaf cutter (above) makes a case out of leaf disks (↓). As it grows, holes remain when larger disks are cut to add to the case (↓). Caterpillar feeding from within the case results in skeletonized "donuts" (↓). Photo: L. Lund

More unusual was a report of what appears to be Oak trumpet skeletonizer, *Catastega timidella*, feeding on lower foliage of a red oak in Thetford.

Both maple (far left) and oak (left) trumpet skeletonizer caterpillars are found in folded leaves within tubes made from their own droppings. Photos: C. Bassage, D. Fisk.

Not so cryptic were the conspicuous nests of Fall webworm and the frequent sightings of Tussock moth caterpillars. Some of the latter can cause a rash when handled. Redhumped caterpillars, whose broad host range includes apples, elm, aspen, and birch, were observed defoliating blueberries in Hyde Park. These have a different defense mechanism: they can give off a disagreeable odor. Also with a broad host range (and not technically eligible for this report since it was brought in by a neighbor from nearby New Hampshire) is the Yellow-shouldered slug moth caterpillar, whose legs are reduced to suction cups.

Several caterpillars with broad hardwood host ranges were observed including (left to right) fall webworm (feeding within nests at the ends of branches), tussock moth caterpillars (like the pale tussock moth shown), redhumped caterpillars, and the yellow-shouldered slug moth. Photos: R. Kelley, Greg Dwyer (SSA)

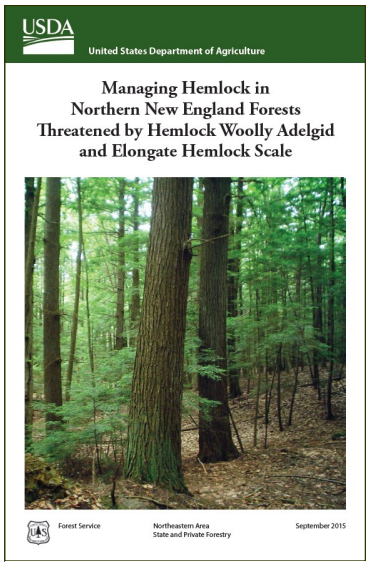
Conifer Insects and Diseases

We continue to be puzzled by reports from throughout the state of scattered balsam fir branch dieback, mostly on landscape trees. However, it's clear that Balsam woolly adelgid is responsible for at least some of the whole tree mortality of balsam fir trees that has been observed this year. Balsam woolly adelgid can be killed by cold winters, so it may be hard to find live insects among the dead trees. However, we have seen light to heavy infestations of the insect on fir trunks in widely scattered locations.

The cause of scattered branch dieback on balsam fir (above) is unclear. Balsam woolly adelgid populations are locally heavy on the mainstems of fir (far left). It may be hard to find signs of the insect where populations of balsam woolly adelgid collapsed after causing tree mortality (left). Photos: A. Jaquith and B. Schultz

By early summer, diseased white pine needles, that had been infected in 2014 by the brown spot needle blight fungus, dropped from the trees. However, individual white pines throughout the state (and region) have since developed tipburn on current foliage. Isabel Munck, at the US Forest Service, has examined affected needles and found a weakly parasitic fungus, *Hendersonia pinicola*. This fungus is known to be a secondary colonizer of pine needle infected by Dooks' Needlecast (If you've been following Latin names, this is caused by a fungus formerly known to us as *Canavirgella* and now called *Lophophacidium dooksii)*. Dooks' needlecast and brown spot have different infection periods, so wet conditions in the spring can promote one or both of these diseases, depending on when those wet conditions occur.

White pine needles with tipburn in late summer may be showing symptoms of Dooks' needlecast. Photo: B. Schultz



The publication Managing Hemlock in Northern New England Forests Threatened by Hemlock Woolly Adelgid and Elongate Hemlock Scale, is now available. This was produced collaboratively with the States of Maine, New Hampshire, and Vermont and the US Forest Service. Print copies will be available in the near future.

Pleasant Aesthetic with Regretful Consequences: Bittersweet

Unlike Asian bittersweet (top) American bittersweet (below) fruits only at the branch tips. Photos: C. Evans

This month's featured invasive plant, Asiatic Bittersweet (*Celastrus orbiculatus*) is native to East Asia, and was introduced to North America in the 1860s as an ornamental plant. It is a perennial liana (woody vine that does not support its own weight). Its oval leaves are serrated along the margins. This species is dioecious (separate male and female plants). Its fruits grow along the whole branch at the axils. When ripe, in late summer into fall, their yellow husks split open to reveal bright red arils.

Asiatic bittersweet (sometimes referred to as Oriental bittersweet) is listed as a National Invasive Species. The ecological threat comes from its ability to grow rapidly, to great heights, in full sun or complete shade, often girdling, weighing down, or smothering plants that support it. In addition, it is displacing the native American bittersweet (*Celastrus scandens*). The two can be distinguished by the fact that American bittersweet has flowers and fruits *only* at the terminal end of each branch. Current research is working to determine the level of cross-pollination between the two, and how that impacts the survival and abundance of the native species.

At one point, Asiatic bittersweet was planted for highway landscaping and as a wildlife food source. It has become widely used in New England for seasonal ornamental arrangements and wreathes. Unfortunately, this tradition has spread the seeds of this plant.

How we can help:

- Use these alternatives for DIY wreaths, hangings, and centerpieces: wild grape, willow, pine cones, crabapples, Virginia creeper, dried wildflowers, cranberries, and evergreen bows.
- Learn how to ID Asiatic bittersweet, and tell it apart from American bittersweet.
- Plant native or non-invasive alternatives.
- Spread the word, not the plant! Vermont's Noxious Weeds rule prohibits the sale, movement, or distribution of Asiatic bittersweet.

FORESTS, PARKS & RECREATION VERMONT
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For more information, contact the Forest Biology Laboratory at 802-879-5687 or:

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